UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/243,107	02/02/1999	JUDITH E. SCHWABE	08993/009001	2012

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EXAMINER
HO, THE T

ART UNIT	PAPER NUMBER
2126	

DATE MAILED: 04/22/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

	Application N|	Applicant(s)
Office Action Summary	09/243,107	SCHWABE ET AL.
	Examiner	**Art Unit**
	The Thanh Ho	2126

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>06 February 2003</u> .

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-82</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-82</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)	4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5)☐ Notice of Informal Patent Application (PTO-152)
3)☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>12</u> .	6)☐ Other: .

DETAILED ACTION

1. This action is in response to the amendment filed 2/6/2003.

2. Claims 1-82 have been examined and are pending in the application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-16, 25-27, 29-46, 55-72, and 81-82 are rejected under 35

U.S.C. 103(a) as being unpatentable over Yellin U.S Patent No. 5,761,513 in view of

Levy U.S Patent No. 6,092,147.

As to claim 26, Yellin discloses managing exceptions throwable during execution

of methods in one or more classes (line 66 column 1 to line 28 column 2) by a virtual

machine (lines 11-57 column 3), each method (each method, line 13 column 3)

including an exception handler array defining exception handlers associated with the

method (the code for the exception handlers, line 14-15 column 3), combining the

exception handler arrays for two or more methods into a single exception handler table

(one table of exception handlers for all the methods in a class, lines 16-18 column 3);

searching the exception handler table (found in a tree search, lines 42-44 column 3)

when an exception is thrown (an exception is thrown, line 41 column 3) while executing

one of the methods (while executing the protected code block, line 65 column 3) including locating a first matching exception in the single exception handler table (the enclosing exception handlers that is applicable to the thrown exception, lines 42-44 column 3). However, Yellin does not explicitly disclose a resource-constrained device.

Levy teaches implementing a virtual machine on a resource-constrained device (Fig. 1). It would have been obvious to apply the teachings of Levy to the system of Yellin because this provides a reduction in the overall memory size and an increase in the overall processing speed of the virtual machine as disclosed by Levy (lines 33-55 column 2).

As to claim 1, note the discussion of claim 26 above.

As to claim 2, Yellin as modified further teaches combining all exception handler arrays for all methods in a class in the single exception handler table (one table of exception handlers for all the methods in a class, lines 16-18 column 3).

As to claim 3, Yellin as modified further teaches combining all exception handler arrays for all methods in all classes in the single exception handler table (lines 19-40 column 3).

As to claim 4, Yellin as modified further teaches combining all exception handler arrays for all methods in a Java package (the methods in a Java class file, line 20 column 3 and Fig. 4) in the single exception handler table (one table of exception handlers for all the methods in a class, lines 16-18 column 3).

As to claim 5, Yellin as modified further teaches a method is included in a class file (the methods in a Java class file, line 20 column 3 and Fig. 4); combining the

exception handler arrays for all methods in a class file in the single exception handler table (one table of exception handlers for all the methods in a class, lines 16-18 column 3).

As to claim 6, note the discussion of claim 26 above.

As to claim 7, Yellin as modified further teaches retrieving in order exception handler entries (first exception handler found, line 42 column 3) from the exception handler table and checking the type and range of each exception handler (class rank is determined by position, lines 49-50 column 3) for the first matching exception handler.

As to claim 8, Yellin as modified further teaches stopping searching if a current exception handler does not match and is the last handler for the top most level of protected code in an associated method (lines 19-47 column 7).

As to claim 9, Yellin as modified further teaches the class files are Java class files (Java class file, line 20 column 3).

As to claim 10, Yellin as modified further teaches the methods in one or more classes are grouped in a package (Java class file, line 20 column 3) where the package includes a package data structure including first and second portions (Fig. 2), the process including storing the exception handler table in the first portion (ThreadDeath to NoSuchMethodError, Fig. 2) of the package and all methods in the second portion (thrownable, error and exception, 122) of the package.

As to claim 11, Yellin as modified further teaches concatenating the exception handler arrays (hierarchy shown in Figs. 2-3) including loading each exception handler

array into the first portion (ThreadDeath to NoSuchMethodError, Fig. 2) of the package

data structure in accordance with a predefined ordering (class rank, line 49 column 3).

As to claim 12, Yellin as modified further teaches the predefined ordering is

determined based on the ordering of methods (class rank, line 49 column 3).

As to claim 13, note the discussion of claim 26 above.

As to claim 14, Levy further teaches the resource constrained device is a smart

card (smart card, line 7 column 3).

As to claim 15, note the discussion of claim 10.

As to claim 16, note the discussions of claims 2 and 10.

As to claim 25, note the discussions of claims 26 and 10-12 above.

As to claim 27, note the discussion of claim 26 above.

As to claim 29, note the discussions of claims 26 and 10-12 above.

As to claim 30, note the discussions of claims 26, and 5-6 above.

As to claims 31-46, note the discussions of claims 1-16 above, respectively.

As to claims 55-57, note the discussions of claims 25-27 above, respectively.

As to claims 58-72, note the discussions of claims 2-16 above, respectively.

As to claims 81-82, note the discussions of claims 25-26 above, respectively.

4. Claims 17-24, 28, 47-54, and 73-80 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Yellin in view of Levy, and further in view of Bak U.S Patent

No. 6,009,517.

As to claim 17, note the discussion of claims 26 above. However, Yellin as modified does not discloses a return pointer. Bak discloses a stack with frames wherein each frame includes a return pointer (line 52 column 2 to line 41 column 3). It would have been obvious to apply the teachings of Bak to the system of Yellin as modified because this allows exceptions propagate through the execution stack for handling by the appropriate exception handler, even when the functions were written in different languages and the format of the exceptions are different as disclosed by Bak (lines 52 column 2 to line 7 column 3).

As to claim 18, Bak further discloses the pointer is a direct pointer to the exception handler information (lines 55-66 column 2).

As to claim 19, note the discussion of claim 9 above.

As to claim 20, note the discussion of claim 26 above.

As to claim 21, note the discussions of claims 2 and 26 above.

As to claim 22, note the discussion of claim 14 above.

As to claim 23, Yellin as modified further discloses registering the package in a registry service at installation (line 11 column 3 to line 9 column 4), the registry service maintaining a pointer indicating a location of the combined exception handler table (lines 41-57 column 3), and a range defining a range of addresses at which methods are located (lines 9-18 column 3).

As to claim 24, Yellin as modified further discloses locating a package associated with a currently executing method including comparing an address at which an exception was thrown against the range for each package registered in the registry

service (line 58 column 3 to line 9 column 4), searching the combined exception handler

table associated with a located package (lines 41-57 column 3).

As to claim 28, note the discussion of claim 17 above.

As to claims 47-54, note the discussions of claims 17-24 above, respectively.

As to claims 73-80, note the discussions of claims 17-24 above, respectively.

Response to Arguments

5. Applicant's arguments filed have been fully considered but they are not

persuasive.

Applicant argued that Yellin does not disclose a resource constrained device

(Remarks, first paragraph page 24). In response, Levy reference was used to teach this

limitation as disclosed in the claim rejection above, not Yellin reference.

Applicant argued that Yellin does not disclose combining all exception handler

arrays for all methods in all classes (Remarks, last paragraph page 24). In response,

Yellin teaches combining all exception handler arrays for all methods in a single

exception handler table (one table of exception handlers for all the methods, lines 16-18

column 3). Moreover, Yellin teaches ordering the exception handlers within the

methods of the classes (lines 44-51 column 3). It would have been obvious to consider

these teachings as the exception handler arrays for all methods in all classes are

arranged in one exception handler table. The reference meets the limitations as broadly

claimed.

Applicant argued that Yellin does not disclose limitations of claim 4 (Remarks, last paragraph page 25). In response, Yellin teaches combining all exception handler arrays for all methods in a class in the single exception handler table (one table of exception handlers for all the methods in a class, lines 16-18 column 3). Yellin further teach the methods are in a Java class file (line 20 column 3 and Fig. 4). The reference meets the limitation as broadly claimed.

Applicant argued that Yellin does not disclose searching the exception handler table (Remarks, third paragraph page 26). In response, Yellin specifically discloses combining all exception handler arrays in the single exception handler table (lines 16-18 column 3) and searching the exception handler table (found in a tree search, lines 42-44 column 3) when an exception is thrown (an exception is thrown, line 41 column 3) while executing one of the methods (while executing the protected code block, line 65 column 3) including locating a first matching exception in the single exception handler table (the enclosing exception handlers that is applicable to the thrown exception, lines 42-44 column 3). The limitations were clearly taught by Yellin. The reference meets the limitations as broadly claimed.

Applicant argued that Yellin does not disclose checking (Remarks, last paragraph page 27). In response, Yellin discloses retrieving in order exception handler entries (first exception handler found, line 42 column 3) from the exception handler table and checking the type and range of each exception handler (class rank is determined by position, lines 49-50 column 3) for the first matching exception handler. Moreover, Yellin discloses only executing the exception handler that is applicable to the thrown

exception (lines 41-44 column 3). It would have been obvious that in order to perform this executing, the step of checking for the right match needs to be performed. The reference meets the limitations as broadly claimed.

Applicant argued that Yellin does not disclose stopping searching (Remarks, third paragraph page 28). In response, Yellin discloses that if an applicable exception handler could not be established, the execution would be aborted (lines 19-47 column 7). The reference meets the limitations as broadly claimed.

Applicant argued that Yellin does not disclose limitations of claim 10 (Remarks, last paragraph page 29). In response, Yellin discloses (in Fig. 2) two portions of (ThreadDeath to NoSuchMethodError) and (thrownable, error and exception) in a package. The reference meets the limitations as broadly claimed.

Applicant argued that Yellin does not disclose limitations of claim 11 (Remarks, third paragraph page 30). In response, concatenating the exception handler arrays (hierarchy shown in Figs. 2-3) including loading each exception handler array into the first portion (ThreadDeath to NoSuchMethodError, Fig. 2) of the package data structure in accordance with a predefined ordering (class rank, line 49 column 3). Moreover, Yellin teaches ordering the exception handlers within the methods of the classes (lines 44-51 column 3). The reference meets the limitations as broadly claimed.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to The Thanh Ho whose telephone number is 703-306-5540. A voice mail service is also available for this number. The examiner can normally be reached on Monday – Friday, 8:30 am – 5:00 pm.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C 20231

Or fax to:

- AFTER-FINAL faxes must be signed and sent to (703) 746 – 7238

- OFFICAL faxes must be signed and sent to (703) 746 – 7239

- NON OFFICAL faxes should not be signed, please send to (703) 746 – 7240

TTH
April 18, 2003

ST. JOHN COURTENAY III
PRIMARY EXAMINER